

Weekly Report

Yuxin Ma

2017.05.08 - 2017.05.14

Misc.

- **Book chapter** The basic introduction of visual analysis has been filled. Currently the remained contents are my own two works on visual machine learning. In the next week I am going to translate my papers into Chinese and fill them into the chapter.

Projects

- **Visual SVM** This week I read several papers from Wang Yunhai about new trends on multi-dimensional projection [1, 2]:
 - Class separation: In these papers a principle for finding informative projections is to present a good class separation, especially for data instances with labels. However non-linear class separation is still a challenge.
 - Perception-related Metrics: Based on [3] and several other papers, human perception started to be considered in object function design and evaluation of multi-dimensional projections. Currently existing works mostly focus on linear class separation.

For extension of these works, one promising topic is how can we explore non-linear class separations. The current SVM works may be applied on this task and I will be working on this in the next week.

Plan for the Next Week

- Translate my two works.
- Try to apply the current SVM work on non-linear class separation exploration.

References

- [1] Y. Wang, J. Li, F. Nie, H. Theisel, M. Gong, and D. J. Lehmann, “Linear Discriminative Star Coordinates for Exploring Class and Cluster Separation of High Dimensional Data,” vol. 36, no. 3, 2017.

- [2] Y. Wang, K. Feng, X. Chu, J. Zhang, C.-W. Fu, M. Sedlmair, X. Yu, and B. Chen, “A Perception-Driven Approach to Supervised Dimensionality Reduction for Visualization,” *IEEE Transactions on Visualization and Computer Graphics*, vol. 1, pp. 1–1, 2017.
- [3] M. Sedlmair and M. Aupetit, “Data-driven Evaluation of Visual Quality Measures,” *Computer Graphics Forum*, vol. 34, no. 3, pp. 201–210, 2015.